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UNITED STATES
PATENT AND TRADEMARK OFFICE

STRATEGIC INFORMATION TECHNOLOGY PLAN for FISCAL YEARS 1996 - 2001

EXECUTIVE OVERVIEW

December 1995
Washington, D. C.

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Message From the Commissioner

In the PTO Strategic Plan for the 1996 - 2000 period, I outlined a new vision and goals for the PTO which recognized the importance of intellectual property protection in a global and technology-based economy. The attached Strategic Information Technology Plan documents the role that information technology plays in achieving PTO's vision and goals. The plan also defines a vision for PTO's information technology environment that will greatly enhance the quality of PTO's service to its customers and guide the PTO Information Technology Program during the FY1996 to FY2001 period.

This plan emphasizes the need to migrate PTO's existing information technology capabilities to a standards-based open system environment while continuing to improve automation support to PTO's customers. The plan documents the following proposed enhancements:

- Making PTOnet Robust, Reliable, and Scalable to Meet Future Needs
- Making all PTO Applications Accessible from Desktop Workstations
- Expanding the Content of and Improve Access to Patent and Trademark Search Data Bases
- Redesigning Legacy Systems to Operate in an Open Systems Environment
- Implementing Reengineered Patent and Trademark Business Processes
- Providing Effective Access to Patent and Trademark Information

All PTO organizational units should ensure that current and planned information technology program initiatives are in conformance with this plan. This plan will be used as the primary basis for justifying and prioritizing future budget requests involving information technology resources.

Bruce A. Lehman

Pennsylvania State University
Libraries

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EXECUTIVE OVERVIEW

Introduction

The Patent and Trademark Office's (PTO) mission is to administer the laws relating to patents and trademarks, promote industrial and technical progress in the United States, and strengthen the national economy. The PTO provides inventors and entrepreneurs with the protection and encouragement they need to turn their inventive and creative ideas into tangible realities. The PTO has established the following two business plan goals designed to protect intellectual property:

- Play a leadership role in intellectual property rights policy development.
- Provide our customers with the highest level of quality and service in all aspects of the PTO operations.

The PTO also recognizes that key supporting strategies for accomplishing its goals are to employ better business processes and information technology to more effectively support the PTO business environment.

.....key supporting strategies for accomplishing its goals are to employ better business processes and leverage information technology....

To help managers and employees better understand the role of information technology in meeting the PTO's mission, goals, and objectives, the Chief Information Officer has developed a Strategic Information Technology Plan (SITP). The SITP contains important information on the PTO's long-term strategic vision for its automation modernization effort, as well as associated program goals, objectives, priorities, and strategies. It also contains important descriptive, scheduling, and funding information on information technology initiatives currently underway as well as those planned during the Fiscal Year (FY) 1996-2001 period. During this period, the PTO plans to spend approximately $1 billion on information technology initiatives.

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Strategic Vision

Whether employees are examining a patent or trademark application, assessing fees, answering customer questions, or providing assistance in the public search facilities, the quality, accuracy, and efficiency of their effort often depends on their ability to access information in a timely manner and in a useful format. With this in mind, the PTO is focusing on a strategic direction to develop an information technology environment for itself, its international partners, and the public, where patent and trademark information is created once, managed effectively, used often, and evolved over time to electronic commerce whereby most internal and external transactions are performed electronically and are accessible through the Global Information Infrastructure.

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Key Assumptions and Constraints

PTO information technology planning decisions are influenced by the PTO's goals and strategic vision as well as various political, social, demographic and technology assumptions and constraints. Several key assumptions and constraints are:

- Program sponsors will increase their requests for development of new AISs and changes to existing AISs while the public's demand for access to patent and trademark data will also increase.
- The ability to satisfy user demands will continue to be restricted by the availability of resources (personnel and funds).
- The funds available for acquiring information technology resources will be less than the demand for resources during the planning period.

- The PTO is totally dependent upon user fees for its income which can fluctuate within and between fiscal years. Income received above or below plan may change information technology initiative schedules due to changes in income streams.

- Required information technology personnel skills required increase as the transition to more complex on-line interactive client server systems continues.

- New technology will continue to evolve and enable users to have faster access to more timely data which will trigger demands to increase the use of information technology to help manage programs and provide new services.

- The present trend toward greater reliance upon data communications to access both internal and external databases through PTOnet will continue.

These assumptions and constraints impose conflicting demands on the PTO's information technology program. While increased demand for more and better automation support is expected to continue, the pressure to limit budget growth and reduce in-house information technology personnel will also continue throughout the planning period. Without adequate funding and sufficient highly skilled information technology staff, the PTO's long-range plans for improving its business processes and leveraging information technology will not be realized.

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Current Information Technology Environment

The current PTO information technology environment represents the baseline from which future improvements will evolve. The PTO's current information technology environment is comprised of the following six components:

- Patent Systems
- Trademark Systems
- Administrative Systems
- Information Dissemination Systems
- Information Technology Infrastructure
- General and Other Support

The PTO's programmatic systems (patent, trademark, and administrative systems) represent the primary automation support provided to examiners and administrative personnel. The PTO's information dissemination program uses various information technology products and services to provide intellectual property information to its customers throughout the world. The information technology infrastructure area encompasses all of the foundation hardware, system software, and communications that have been deployed in support of the PTO mission. General and other support includes those information technology activities that support all PTO AISs, such as information technology acquisitions, system engineering, data management, and information technology organizational management.

A distinctive characteristic of the PTO's information technology environment is the management of large and continually growing text and image data bases coupled with a requirement to process very large volumes of transactions to support application processing. As shown in figure 1 below, Patent application filings will continue to increase and reach approximately 234,000 by FY2000.

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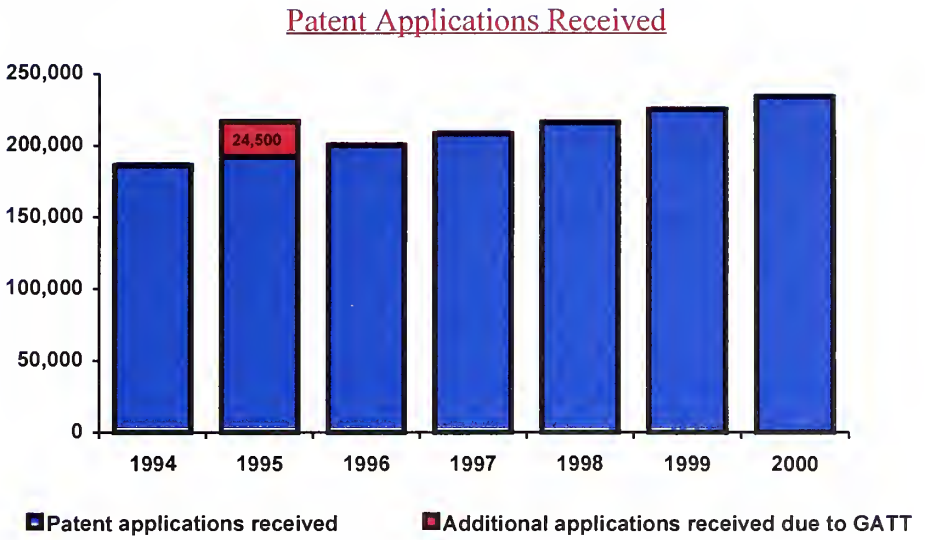

Figure 1

As shown in figure 2, trademark application filings are also expected to continue their growth through FY2000.

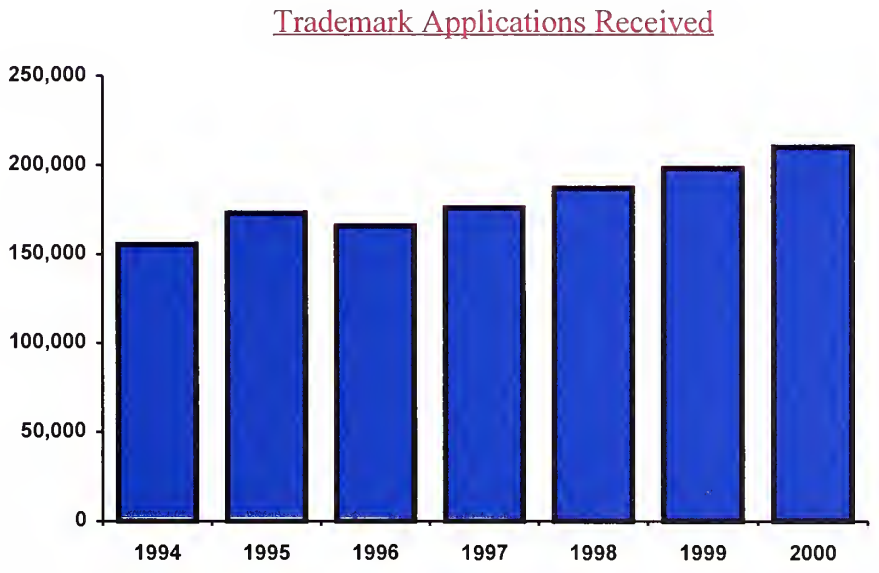

Figure 2

In FY1995, other PTO workload activity reached the following levels:

- 114,241 U. S. patents of all types were granted.
- 75,372 trademark applications were registered.
- 680,295 orders for patent copies and 25,939 orders for trademark copies were received.
- The PTO managed the accessibility, accuracy, and integrity of over 36 million patent and trademark related documents (referred to as search files).
- Examiner search transactions averaged over 300,000 per month.
- Administrative system transactions averaged over 5 million per month.

Support for the PTO's varied workloads requires a significant investment in information technology resources.

Support for the PTO's varied workloads requires a significant investment in information technology resources. These information technology resources include central computer systems, state-of-the-art office automation capabilities linked together through a PTO-wide communications network (PTOnet), and a cadre of highly skilled personnel. PTOnet is a comprehensive end-to-end data transmission facility linking servers, workstations, shared printers, and PCs in the PTO. It is a multi-ring network providing logical connectivity and network services to more than 5,000 customers of office automation products and access to the PTO's business applications and data bases throughout the 13 building campus in Arlington, Virginia. An architectural view of the PTO's current information technology environment is shown in Figure 3 below.

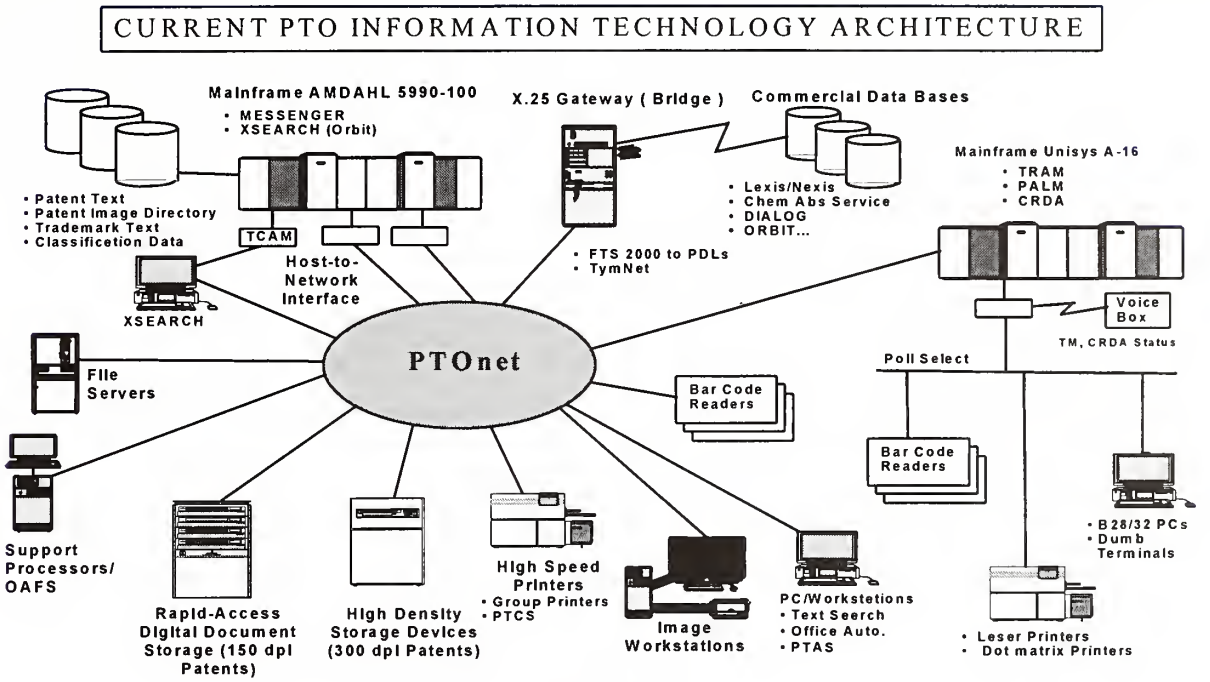

Figure 3

Information Technology Management Strategies

Organizational Responsibilities

PTO information technology policy is to centralize information technology program-related: planning, technical direction, oversight, policy formulation, system development and acquisition, business process improvement, and day-to-day operational management of the PTO information technology infrastructure under the Chief Information Officer. The dissemination of associated information products and services to the public is under the direction of the Associate Commissioner and Chief Financial Officer. This management framework provides for the evolutionary application of new technology, and fosters uniformity throughout the PTO through the standardization of hardware, software, and data to the maximum extent possible while ensuring responsive support.

The PTO also recognizes the role that individual employees play in identifying new and innovative information technology solutions. Innovations such as the "Examiner Toolbox" are an excellent example of how capabilities developed to support a few employees can be expanded to benefit PTO-wide activities. The information technology management framework established by the CIO through the Technical Reference Model and PTO's life cycle management policy provides

the flexibility needed to encourage continued innovation while ensuring that new capabilities can be easily expanded beyond the developer's desktop and can be supported by the PTO information technology infrastructure and maintained by the CIO.

Governing Strategies

To enhance the effectiveness of information technology management within the PTO, the Chief Information Officer has developed several key governing strategies. These strategies represent the fundamental principles and philosophies which the PTO will follow in managing its information technology resources and meeting the PTO's information needs. The governing strategies are summarized in the following four elements: project management, application software, data, and information technology infrastructure (hardware, network, and system software). The following provides a brief description of key strategies in each area.

Project Management Strategies

The project management strategy area addresses the overall management, control, and resource allocation of information technology projects.

1. All future PTO Automated Information System (AIS) projects will apply matrix management and follow the PTO's current Life Cycle Management Policy for systems development activities.

2. Project management organizations will be adequately staffed to manage the AIS project.

3. Each information technology project will be baselined in the PTO project management control system to ensure adequate visibility into actual progress and accurate tracking of project costs.

4. PTO information technology resource acquisitions will emphasize full and open competition and will adhere to current and planned PTO information technology standards.

Application Software Strategies

The application software strategy area includes the analysis, design, development, implementation, operation, maintenance or enhancement of application software.

1. The PTO is committed to improving its business processes. Therefore, business process re-engineering will precede application software design and development, whenever possible.

2. A standard system development methodology, processes, and supporting tools will be used on all PTO application software projects.

3. When appropriate, prototyping will be used to more clearly define requirements.

4. Software upgrades, re-use and sensitive information security will also be emphasized on all PTO software development efforts.

Data Management Strategies

The data element strategy area includes standardization, control, and the integrity of data being stored and manipulated.

1. The PTO will standardize and register data models and data elements in a data repository system which will facilitate data sharing, data re-use, and interoperability among AISs.

2. The PTO will also foster increased data sharing with its external customers by pursuing electronic data interchange agreements with international intellectual property and patent organizations and selected private sector organizations.

Information Technology Infrastructure Strategies

The information technology infrastructure strategy area includes ongoing operations, modifications, augmentation, replacement, and maintenance of computer and communications equipment, network facilities, and system software.

1. The PTO will transition its information technology infrastructure to a standards-based open system environment

2.. The PTO will migrate to a distributed client/server architecture

3. The PTO will use standard applications and systems software.

The governing strategies established by the Chief Information Officer will guide the PTO's future information technology initiatives and will greatly assist in enhancing the quality of information technology support provided to the PTO's customers.

Strategic Information Technology Initiatives

The heterogeneous nature of the PTO's current information technology environment is constraining the PTO's ability to infuse rapidly new technology to meet the constantly growing demands of the PTO workforce. Consequently, the PTO will focus its efforts on transitioning its current information technology infrastructure to a standards-based open system environment. A Technical Reference Model, based on the National Institute of Science and Technology's Application Portability Profile, has been developed which provides a comprehensive set of information standards, services, protocols, and products that define the target technical environment and guide future information technology efforts.

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Current AISs are a major impediment to implementing reengineered patent and trademark business processes. The current systems are not constructed based on an architecture that allows easy adaptation to continuously changing business needs and require duplicative communications networks and hardware are expensive to maintain and operate. Because PCs located on employees desktops are not able to access and process patent and trademark information, employees are forced to use several types of devices to complete their normal work tasks. The current PTO systems are becoming increasingly resistant to change and are continually requiring more resources to maintain and operate. A systematic incremental approach has been devised to implement new automated systems that support reengineered patent and trademark processes which will dramatically improve operating efficiency and greatly improve customer satisfaction.

As the PTO moves to an open system environment, its information technology service enhancement plans will be focused in the following areas:

- Make PTOnet Robust, Reliable, and Scalable to Meet Future Needs

- Make all PTO Applications Accessible from Desktop Workstations
- Expand the Content of and Improve Access to Patent and Trademark Search Data Bases
- Redesign Legacy Systems to Operate in an Open Systems Environment
- Implement Reengineered Patent and Trademark Business Processes
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An overview of proposed major enhancements in each of the focus areas is discussed below.

Make PTOnet Robust, Reliable, Scalable, and Secure to Meet Future Needs

The PTO continues to experience exponential growth in both the use of its networked computer workstations and its PTOnet-provided office automation support services. A robust, reliable, scalable, and secure network is critical in the evolution towards the PTO's future information technology environment in which most internal and external transactions are performed electronically.

The PTO currently has five terabytes of patent and trademark image data that is projected to grow to 15 terabytes by the year 2000. Image traffic places a huge workload and stringent performance requirements on PTOnet. Currently, there is relatively limited access via the shared workstations to the patent image data. The combination of easier access via desktop workstation, and a two and a half fold increase in data base size, requires a redesign and upgrade of PTOnet. This is particularly necessary to support the increased demand for images at the examiner's desktop PC workstation as well as the many new resource intensive applications already in development or planned. In addition, security will be a far greater concern. As patent applicant information will be electronically available prior to public release, this, in turn, greatly increases the risk of industrial espionage. To address these expanding needs as well as future public access requirements, several major enhancements have been

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planned to make the current system architecture more robust, reliable, scalable, and secure.

PTOnet will become an open system standards-based high speed network providing data communications for the PTO campus and access to remote locations through secure gateways. The PTO plans to integrate all PTOnet sub-networks; facilitate universal transfer and exchange of electronic mail, word processing, spreadsheets, text, and image data; provide access to business applications; provide access to external commercial data bases and external networks where policy permits; support electronic commerce for patent and trademark applications and financial transactions; and provide for adequate security.

One critical near-term PTOnet enhancement is the replacement of the existing file server infrastructure with updated components designed for the current application file server environment. Additional near-term enhancements include: upgrading the current communications backbone through installation of high speed switching devices employing Asynchronous Transmission Mode (ATM) technology and enhancing network security to support work at home projects. Longer term enhancements include: implementation of centralized network management tools to support automated operations; and the upgrade of the current line speed from workstations to servers from 10 megabits per second to 100 megabits per second.

Make all PTO Applications Accessible from Desktop Workstations

The PTO plans to make all business and office automation applications and data bases accessible from employee desktop workstations in a seamless and integrated fashion by July 1998. The PTO will implement a common workstation interface that will enable the PTO employees to interact with business and office automation applications regardless of what hardware and software is used or where the data resides.

The PTO plans to make all business and office automation applications and data bases accessible from employee desktop workstations in a seamless and integrated fashion by July 1998.

The current information technology infrastructure of incompatible mainframe, minicomputer, and microcomputers with incompatible COTS software products has hampered the PTO's ability to implement a common workstation interface that can access business and office automation applications and supporting data bases.

The PTO's critical business systems are based on technologies from the 1970's, 1980's, and 1990's. PALM, TRAM, and CRDA mainframe data bases are accessed directly by terminals. The Classified Search and Image Retrieval workstations use the Unix operating system. Most other business and office automation applications use the PC based Windows operating system. A common desktop workstation operating system with data base access through PTOnet is needed to provide the seamless interface to all PTO business and office automation applications.

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The PTO plans to migrate over the next 3 years to the Windows NT operating system at the desktop workstation to provide the seamless interface with all of the PTO's office automation and business applications. To help achieve this migration, the PTO will replace all existing PCs and terminals on the desktops of the PTO employees and the image workstations in the Patent cluster rooms, as well as the PC workstations in the trademark examining attorney "bullpens", with enhanced PC based text/image workstations.

The PTO will deploy 700 PC based text and image workstations to patent and trademark examiners by December 1996.

The PTO will deploy 700 PC based text and image workstations to patent and trademark examiners by December 1996. The patent examiner workstations will have both the Unix and Windows operating systems installed which will provide access to the patent text and image data as well as the office automation applications at the examiner's desktop. However, the access will not be seamless until the Unix-based business applications are replaced by Windows NT applications in 1998. The PTO plans to complete the installation of the PC based text and image workstations to all patent examiners by December 1997. PALM and TRAM will be accessible by PC workstations over PTOnet by September 1996. Trademark examining attorneys will also have access to additional Trademark business and office automation applications from their desktop by July 1996.

PALM and TRAM will be accessible by PC workstations over PTOnet by September 1996.

In addition to the above, several key business and office automation projects, also underway, include the Executive Information System (EIS) and the Executive Document Management System (EXDOCS). The EIS project, in this regard, is expected to provide a single easily accessible data repository for critical finance, human resources, diversity, production, workload, contracts, and international operations by the end of FY1996. Likewise, beginning with a limited pilot test in FY1996 and followed by incremental expansion to at least 20 users each year thereafter, EXDOCS is expected to greatly improve office-wide document tracking, streamline the executive document review, correction, and approval process, and improve document standardization.

Expand the Content of and Improve Access to Patent and Trademark Search Data Bases

The PTO is building an open system standards-based information technology infrastructure to support the examination of patent and trademark applications and to support information dissemination and administrative functions. The infrastructure includes the ability to electronically search the text of U.S. patents issued since January 1971 and the more than 1.5 million trademark registrations and applications. These text search functions are provided by commercial products modified to meet the PTO requirements. The patent and trademark search systems are expensive to maintain and can be difficult to learn and use. In addition, the trademark search system can only be accessed by 60 concurrent users and access to foreign patent information is very limited. The PTO plans to replace the existing text search systems with Commercial-Off-The-Shelf (COTS) products, expand the content of PTO data bases, and provide greater access to external data bases.

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The PTO's long range goal is to achieve a mostly electronic operation with minimal reliance on paper. Patent examiners will need extensive search capabilities for both text and other patent content in order to shift the reliance on paper files to the electronic files. Text search is a key component

The PTO currently plans to begin replacing its current Patent Text Search System beginning in late 1998 and complete this replacement by FY2001.....

to a number of the PTO operations, including examination and classification. The PTO plans major improvements to the content of and access to patent prior art data bases and the functionality and user friendliness of the search tools. The PTO currently plans to begin replacing its current Patent Text Search System beginning in late 1998 and complete this replacement by FY2001 with a number of COTS search products to support the unique requirements of the different art groups. Should funds become available, the PTO will accelerate the text search replacement to take advantage of many new products now on the market. Future text search products, in this regard, will be able to search the text, sections of text (e.g., claims) and ultimately, graphics and other complex work units attached to a patent such as chemical structures and be fully integrated into PTO's electronic operations.

The PTO plans to expand the text search capabilities to include foreign patents by supplementing the current patent examiner desktop workstation text search capability with clipped first page images of selected Japanese and European patents beginning October 1996. The PTO plans to incrementally load the foreign patents and make the entire Japanese and European patent data base available by FY2001. The PTO also plans to assess the economic feasibility of performing an Optical Character Recognition (OCR) data capture of text information for U.S. patents issued prior to January 1971. Should funds become available or current technology improve to the point of making it economically feasible, the PTO will expand the patent text search data base. This data capture effort would focus on arts which are reasonably active and in which text search adds value beyond that obtained from image searching.

The PTO plans to incrementally load the foreign patents and make the entire Japanese and European patent data base available by FY2001.

The PTO plans to make significant improvements in the performance of the current Trademark Search System, by expanding the systems ability to support a greater number of concurrent users (from 60 to 300) and providing a number of functional improvements over the current version. Additional search functions include range

The current Trademark Search System will be replaced by July 1996 and will be accessible from the examining attorney's desktop workstation over PTOnet.

searching, additional search fields, and the ability to stop a search in progress. The current Trademark Search System will be replaced by July 1996 and will be accessible from the examining attorney's desktop workstation over PTOnet.

Redesign Legacy Systems to Operate in an Open System Environment

In order to improve customer service, legacy business applications must be replaced as quickly as economically feasible by AISs that use "open system" components and have an architecture that facilitates modification, thereby requiring less resources to operate and enhance. In order to do more with less, greater use must be made of COTS software products and development methods. The new systems must use business objects that are familiar to patent and trademark customers. To that end, the OCIO has developed a strategy to accommodate changes that are occurring more frequently than in the past, must be implemented in ever shortening periods of time, and will support reengineered business processes.

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The migration from legacy business applications to AISs based on modern open system architectures will be achieved within the context of the patent and trademark TO-BE models. In order to reduce operating costs and eliminate duplicative hardware and communication networks, the OCIO must migrate to "open system" products and services that take advantage of technological improvements that have been made in hardware, software and communication techniques. Current PTO business applications and systems represent an aging set of products that have repeatedly been modified, were not designed to support business processes that have been reengineered, are exhibiting constantly increasing maintenance and operating costs, and use hardware and communication networks that are technologically obsolete.

The PTO is critically dependent on the Patent Application Location and Monitoring (PALM), Cash Receipts and Deposit Accounts (CRDA), and Trademark Reporting and Monitoring (TRAM) legacy systems to support day-to-day operations. Collectively,

The PTO is critically dependent on.....legacy systems to support day-to-day operations.

they processed more than 57 million transactions in FY1994. These systems were developed more than 15 years ago and have undergone a variety of changes over time. Some of the significant changes include: platform migrations, expansion of capabilities, new reporting requirements and system changes to reflect changing business processes. These systems are costly and difficult to maintain and cannot take advantage of advances in technology. The PTO has also experienced difficulty in hiring personnel and contractors that can maintain these systems.

PALM performs workflow tracking and status reporting for patent application processing. Based on concerns raised during customer focus sessions, the PTO conducted an independent technical assessment of PALM. The major assessment findings are that PALM: (1) is constantly undergoing change; (2) there is no formal configuration management of this change; (3) is very dependent on institutional knowledge to keep it running; (4) program modules are poorly constructed, complex, and difficult and costly to maintain; and (5) has a significant century date change problem which can lead to erroneous results as early as FY1998. The PTO plans to initiate formal configuration management of PALM, stabilize the system, make revisions to solve the century date change problem and begin to redesign PALM to operate in an open system environment. The PTO plans to have the redesigned PALM operational by mid-FY1998.

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TRAM contains bibliographic and prosecution history information for more than 1.85 million applications and registrations, performs workflow tracking, photocomposes the Trademark Official Gazette and produces management reports. TRAM is an integral component of workflow procedures relating to the applications and the maintenance of registrations. TRAM is dependent on institutional knowledge to keep operating properly and has a significant century date change problem which can lead to erroneous results as early as 1998. TRAM is costly and difficult to maintain and cannot take advantage of advances in technology available in an open system environment. The PTO plans to have the redesigned TRAM operational by mid-1998. The redesigned TRAM will begin the incremental implementation of the reengineered trademark business processes.

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The PTO is currently authorized by legislation and administrative rules to recover all costs through the collection of user fees. CRDA supports the processing of receipts (cash, credit cards, and checks) that accompany applications and the purchase of the PTO information products and the management of deposit accounts. However, CRDA is costly and difficult to maintain and cannot take advantage of advances in technology available in an open system environment. In addition, CRDA does not conform to Federal requirements for financial management systems. Recognizing these shortcomings, the PTO initiated the development of the Revenue Accounting and Management (RAM) System in 1994 to replace CRDA. The PTO plans to deploy the initial version of RAM in September 1996. The PTO will add electronic data interchange (EDI) mechanisms to facilitate fee transaction processing and collections between the PTO and its external financial institutions beginning in 1998.

The PTO plans to deploy the initial version of RAM in September 1996.

Implement Reengineered Patent and Trademark Business Processes

The PTO has completed the design of the reengineered patent and trademark business processes. These reengineered business processes rely heavily on information technology to achieve dramatic improvements in how the PTO accomplishes its mission and provides products and services. Key features of the PTO's future automation environment, in this regard, include: (1) state-of-the-art desktop tools; (2) one-time data capture and data availability through an integrated system; (3) electronic filing and interactive prosecution; and (4) enhanced communication and workflow support systems that allow flexible use of resources; (5) expanded public access to patent and trademark information from geographically dispersed areas; and (6) enhanced management reporting capabilities tailored to meet operational and executive management needs. There are several planned AIS projects that will support the reengineered patent and trademark business processes. These projects include: providing an automated assisted classification and search capability to support the reengineered patent examination process, the Patent Application Management (PAM) system, the

The PTO has several planned AIS projects that will support the reengineered patent and trademark business processes. These include the Patent Application Management (PAM) system, the Trademark Information System (TIS), the Patent and Trademark Text Search Replacement projects, and Global Patents.

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The implementation of electronic filing is critical to the efficiency, effectiveness, and operational cost reductions associated with PAM and TIS. The PTO has been following a staged approach in developing its concept for electronic filing since 1992. The PTO has initiated a series of pilot programs primarily focused on the development of software having the functionality needed for initial electronic filing of patent and trademark applications. To date, participants in these pilot programs have included members of intellectual property firms and corporate offices. The PTO surveyed pilot participants in early 1994 to determine the best approach to implementing electronic filing. Based on the survey results, the PTO has developed a "concept of operations" for achieving bi-directional electronic filing capability between the PTO and its applicant community. The concept has also been agreed to by our Trilateral partners. The concept includes two Implementation Guides, one for filing diskettes and another for on-line filing. The Implementation Guides are presently under review by the PTO's Trilateral partners. The PTO plans to issue the guide on diskette filing in late 1996 after it has gone through the public review process. The PTO plans to issue the on-line filing guide in late 1997. These guides will provide a clear definition of the PTO's basic electronic application filing requirements as well as establish a set of minimum standards which software developers must meet.

The implementation of electronic filing is critical to the efficiency, effectiveness, and operational cost reductions associated with PAM and TIS.

The PTO plans to initiate development of PAM in late 1997 and incrementally deploy capability through 2001. PAM will eventually accept electronically filed patent applications, simplify and expedite Patent Examiner actions including interacting with applicants and agents, track patent applications through all phases of the process, and ready the patent for publishing. The Pre-Grant Publication system and the redeveloped PALM system will serve as a foundation from which to develop PAM.

The PTO plans to initiate development of PAM in late 1997 and incrementally deploy capability through 2001.

The PTO plans to initiate development of TIS in 1997 and incrementally deploy capability through 2001. TIS will eventually accept electronically filed trademark applications, maintain an electronic file for application and registration, record prosecution history and production information, improve search capabilities, photocompose the Trademark Official Gazette and Registration Certificates, and disseminate trademark information. The redeveloped TRAM system will serve as a foundation from which to develop TIS.

The PTO plans to initiate development of TIS in 1997 and incrementally deploy capability through 2001.

Improve Electronic Information Dissemination to External Customers

As an integral part of its mission, the PTO must assure that patent and trademark information is available to all sectors of society that have a need for and can use the information. The PTO must strive to meet the challenges of today's technologies by making information available in the most useful forms and at reasonable prices, while recovering costs associated with the dissemination process.

The PTO must strive to meet the challenges of today's technologies by making information available in the most useful forms and at reasonable prices, while recovering costs associated with the dissemination process.

Three principal components of the PTO's approach in this area include: 1) developing and providing a variety of electronic information products directly to the public, or indirectly through local search facilities and Patent and Trademark Depository Libraries (PTDLs), 2) sale of data base copies developed for internal use to private sector companies who repackage the data and ensure its availability to a wide audience of users, and 3) reliance on the nationwide network of PTDLs to provide broad public access and support to users of PTO information.

Key projects currently underway, in this regard, include the External Access Gateway, Electronic Information Center (including a special project that will provide 20 years of searchable patent bibliographic text data on the Internet), and Patent and Trademark Information Products.

Key projects ... include the External Access Gateway, Electronic Information Center, ... and Patent and Trademark Information Products

Implementation Schedule

Key milestone dates for the strategic information technology initiatives are summarized in Figure 4 on page 22.

Information Technology Budget

A complete financial summary of how the PTO plans to spend approximately $1 billion in support of information technology projects during the FY1996-2001 planning period is provided in Figure 5 on page 23.

PTO Master Implementation Schedule for Strategic Information Technology Initiatives

INITIATIVES	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
Make PTOnet Robust, Reliable, Scalable, and Secure to Meet Future Needs	Begin replacement of existing file server infrastructure. Begin upgrade of current communications backbone. Begin enhancement of network security to support Work At Home projects. Begin implementation of centralized network management tools.	Complete replacement of existing file server infrastructure. Complete upgrade of current communications backbone. Complete network security to enhancement to support Work At Home projects. Begin upgrade of desktop workstation line speed from Mbs. to 100 Mbs.		Complete full upgrade of line speed from desktop workstations to servers from 10 Mbs to 100Mbs.		
Make All Applications Accessible From Desktop Workstations	Begin work on desktop accessibility of business/ office automation applications and data bases. Begin migration to Windows NT. PALM and TRAM accessible from desktops over PTOnet. Deploy initial EIS and EXDOCS capability.	Deploy 700 desktop workstations to patent and trademark examiners by December 1996. Begin expanded deployment of EIS capability. Begin expanded deployment of EXDOCS.	Complete migration to Windows NT Operating Systems to provide seamless interface with PTO-wide office automation and business applications. Complete deployment of patent desktop workstations. Additional 1600 desktop workstations deployed by December 1997.	Begin deployment of replacement workstations.	Continue deployment of replacement workstations.	Continue deployment of replacement workstations.
Expand the Content of and Improve Access to Patent and Trademark Search Databases	Supplement Patent examiner desktop workstations with Japanese and European clipped images. X-Search Version 1.1 ready for use on Trademark examiner desktops.		Begin replacement of current patent text search system			Complete replacement of patent text search system. Complete incremental load of foreign patents. Entire Japanese and European data base now available on examiner desktop workstations
Redesign Legacy Systems to Operate in an Open System Environment	PALM accessible to a limited number of users.	Initial version of RAM operational.	Redesigned TRAM operational. Redesigned PALM system operational.			
Implement Reengineered Patent and Trademark Business Processes	Issue Electronic Filing Implementation Guide (Vers.1- Filing on diskettes).	Initiate PAM development. Initiate TIS development. Issue Electronic Filing Implementation Guide (Vers. 2- Filing on-line).	Begin incremental deployment of PAM. Begin incremental deployment of TIS.			Complete PAM Vers.3. Complete incremental deployment of PAM. Complete incremental deployment of TIS.
Improve Electronic Information Dissemination to External Customers	Expand automated data bases and search tools available to the public at PTDLs throughout country via Internet. Electronic Information Center available to the public. Expand magnetic tape, CD-ROM, other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,	Continued expansion of automated data bases and search tools available to the public at PTDLs throughout country via Internet. Continued expansion of magnetic tape, CD-ROM, and other commercial products and services,

Figure 4

PTO Information Technology Financial Summary

(Financial estimates below are stated in thousands of dollars)

		FY96	FY97	FY98	FY99	FY00	FY01
Patent Systems							
Projects		45,579.41	43,710.10	61,610.40	67,344.00	59,136.20	51,872.60
Personnel		4,915.85	4,815.85	4,936.52	5,060.84	5,188.90	5,320.82
	Subtotal	50,495.26	48,525.95	66,546.92	72,404.84	64,325.10	57,193.42
Trademark Systems							
Projects		1,779.90	3,696.30	3,601.00	9,028.40	12,230.50	11,137.10
Personnel		2,314.10	2,171.60	2,229.72	2,285.04	2,342.03	2,400.72
	Subtotal	4,094.00	5,867.90	5,830.72	11,313.44	14,572.53	13,537.82
Administrative Systems							
		4,537.82	3,310.30	3,729.43	2,536.95	2,326.98	2,127.91
		630.00	630.00	648.90	668.37	688.42	709.07
	Subtotal	5,167.82	3,940.30	4,378.33	3,205.32	3,015.40	2,836.98
Information Dissemination Systems							
Projects		8,590.30	7,388.40	8,831.40	8,920.90	7,749.80	8,016.00
Personnel		1,006.00	1,012.10	1,018.30	1,024.70	1,030.30	1,038.10
	Subtotal	9,596.30	8,400.50	9,849.70	9,945.60	8,780.10	9,054.10
Information Technology Infrastructure							
Projects		42,693.30	40,315.05	42,622.90	43,235.30	46,034.90	48,249.70
Personnel		10,509.10	10,440.30	10,705.88	10,979.42	11,261.17	11,551.37
	Subtotal	53,202.40	50,755.35	53,328.78	54,214.72	56,296.07	59,801.07
General and Other Support							
General Support							
Projects		19,181.70	20,173.50	21,710.60	22,112.40	21,901.40	22,221.80
Personnel		9,162.99	6,366.85	6,505.98	6,649.27	6,796.87	6,948.90
Acquisition Support							
Projects		3,349.90	13,506.20	14,656.20	10,106.20	16,006.20	8,856.20
Personnel		980.60	980.60	1,005.28	1,090.70	1,056.88	1,083.84
	Subtotal	32,675.19	41,027.15	43,878.06	39,958.57	45,761.35	39,110.74
TOTAL PROJECTS		**125,712.33**	**131,099.85**	**156,761.93**	**163,284.15**	**165,385.98**	**152,481.31**
TOTAL PERSONNEL		**29,518.64**	**26,417.30**	**27,050.58**	**27,758.34**	**28,364.57**	**29,052.82**
TOTAL		**155,230.97**	**158,517.15**	**183,812.51**	**191,042.49**	**193,750.55**	**181,534.13**

Figure 5

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